Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

tricotyledonous. Among these we found a specimen with three cotyledons and have again saved the seed from it, and we are expecting to plant quite a few seeds this spring. We planted none last year but those from the chosen plant of 1918, but made no attempt to prevent cross-pollination.

The tricotyledonous castor bean of 1919 was certainly abnormal, as it had such evident seed leaves of the unusual number. Two of these cotyledons were abnormal in having an extra large size. In addition we noted that these seeds were abnormally thick in their smaller diameter. They seemed to give external evidence of their abnormal nature. However, only one of the seeds planted—a dozen or more—showed more than two cotyledons.

A Preliminary List of Insects of the Sorghum Field.

WM. P. HAYES.*

Large numbers of insects are found in association with sorghum plants in the fields of the Great Plains area. Some feed on the plant, some are predatory, and others are casual visitants seeking shade from the sweltering sun or protection from unfavorable conditions, such as damp or dry soils.

Under a new project, "Insects Injurious to Sorghums," recently established by this department, a thorough study of the insects of the sorghum field was begun during the summer of 1919. A necessary requirement for such a work was the preparation of a list of the more common species found in the sorghum fields. In view of the recent introduction into America of the European corn borer, *Pyrausta nubilalis* Hübner, in broom corn from Europe, a survey of the Western states where this broom corn was ultimately distributed is being planned by the United States Bureau of Entomology. As this list, together with the more important references to the subject, may be of some value to those engaged in the survey, it seems advisable to present it at this time, even though it is not complete.

The writer wishes to acknowledge his indebtedness to Mr. Warren Knaus, who determined the Coleoptera mentioned in this list, and to S. A. Rohwer and A. B. Gahan, who determined most of the Hymenoptera, and also to express regret that the numerous species of Diptera, now in the hands of a specialist, are not ready for presentation at this time.

ORTHOPTERA.

Hesperotettix speciosus Scudd. (Injures sorghum in southern Kansas, Forbes, 1905, p. 142.)
Melanoplus bivittatus Say.
Melanoplus differentialis Uhler.
Melanoplus femur-rubrum DeGeer.
Melanoplus atlanis Riley.
Dissosteira carolina Linn.
Gryllus pennsylvanicus Burm.

---

* Contribution No. 57 from the Entomological Laboratory, Kansas State Agricultural College. This paper embodies some of the results of the investigations undertaken by the author in the prosecution of project No. 92 of the Kansas Agricultural Experiment Station.

ISOPTERA.

Reticulitermes lucifugus Rossi.

NEUROPTERA.

Chrysopa oculata Say.
Chrysopa rufalabris Burm.

HEMIPTERA.

HETEROPTERA AND HOMOPTERA.

Chlorochroa (Pentatoma) ligata Say. (Newell, 1915, p. 15.)
Euschistus variolarius P. B. (Forbes, 1905, p. 196.)
Thyanta perditor Fabr. (Sanderson, 1904, p. 94.)
Thyanta custator Fabr. (Morrill, 1910, p. 8.)
Apateticus (Podisus) maculiventris Say.
Leptoglossus phyllopus Linn. (Forbes, 1905, p. 203.)
Aufeius impressicollis Stal.
Nysius ericæ Schill.
Blissus leucopterus Say.
Sinea diadema Fabr.
Pagasa fusca Stein.
Nabis (Coriscus) ferus Linn.
Triphleps insidiosus Say.
Monecphora bicincta Say. (Hutson, 1918, pp. 186, 187.)
Stictocephala festina Say. (Wildermuth, 1915, p. 346.)
Stictocephala rufivitta Walk. (Wildermuth, 1915, p. 346.)
Drœculacephala mollipes Say. (Forbes, 1905, p. 205.)
Homalodisca triquetra Fabr. (Sanderson, 1906, pp. 50 and 53.)
Oliarus aridus Ball.
Ormenis pruinosa Say. (Forbes, 1905, p. 203.)

APHIDIDÆ.

Wilson and Vickery (1918, pp. 336, 337), in their list of food plants and aphids said to attack them, cite the following aphids as associates of sorghum plants:

"On *Sorghum* sp.
    Aphis sorghella Schoutenden.
On *Sorghum dora.*
    Aphis maidi-radicis Forbes.
    Aphis maidis Fitch.
    Sipha flavus Forbes.
On *Sorghum halepense.*
    Aphis avenæ Fabricius.
    Aphis maidis Fitch.
    Aphis maidi-radicis Forbes.
    Sipha flavus Forbes.
    Sipha maydis Passerini.
    Tetraneura ulmi Linnæus.
    Toxoptera graminum Rondani.

On *Sorghum saccharatum—S. vulgare.*
- *Aphis avenæ* Fabricius.
- *Aphis maidi-radicis* Forbes.
- *Aphis maidis* Fitch.
- *Macrosiphum caianense* Del Guercio.
- *Pemphigus fuscifrons saccharata* Del Guercio.
- *Pemphigus radicum* Boyer.
- *Sipha flavus* Forbes.
- *Sipha maydis* Passerini.
- *Tetraneura ulmi* Linnæus.

On *Sorghum vulgare.*
- *Anœcia corni* Fabricius.
- *Aphis africana* Theobald.
- *Aphis avenæ* Fabricius.
- *Aphis sorghi* Theobald.
- *Pemphigus radicum* Boyer.
- *Tetraneura ulmi* Linnæus.
- *Toxoptera graminum* Rondani."

Pemphigus (*Tychea*) *brevicornis* Hart. (Chittenden, 1903, p. 62.)

COCCIDÆ.

Pseudococcus sacchari. (Anon., 1912, pp. 466-469.)
Pseudococcus calceolariæ Mask. (Halloway, 1913, p. 4.)

COLEOPTERA.

Cicindela trunquebarica Hbst.
Cicindela punctulata Fabr.
Calasoma calidum Fabr.
Bembidium constrictum Lec.
Pterostichus substriatus Lec.
Pterostichus stygicus Say.
Pterostichus permundus Say.
Pterostichus lucublandus Say. (Knight, 1916, p. 763.)
Cratacanthus dubius Beauv.
Harpalus caliginosus Fabr. (Knight, 1916, p. 763.)
Harpalus pennsylvanicus Dej.
Harpalus testaceus Lec.
Cryptobium pallipes Grav.
Tachyporus sp.
Phalacrus politus Mels.
Eustilbus (*Olibrus*) *apicalis* Mels.
Eustilbus nitidus Mels.
Acylomus calcaratus Casey.
Hippodamia convergens Guer.
Megilla fuscilabris Mels.
Scymnus collaris Mels.
Horistonotus uhleri Horn. (Gibson, 1916, p. 3.)
Cryptorhypnus pectoralis Say.
Limonius californicus Mannh. (Graf, 1914, p. 16.)

Collops 4 = maculatus Fabr.
Atœnius gracilis Mels.
Lachnosterna cribrosa Lec. (Vickery and Wilson, 1919, p. 243.)
Anomala semilivida Lec. (Titus, 1905, p. 88.)
Dyscinetus (Chalepus) trachypygus Burm. (Chittn., 1905, p. 604.)
Euetheola (Ligyrus) rugiceps Lec. (Forbes, 1905, p. 99.)
Myochrous denticollis Say. (Forbes, 1905, p. 103, and Titus, 1905, p. 88.)
Diabrotica 12 = punctata Oliv.
Diabrotica balteata Lec. (Marsh, 1910, p. 77.)
Diabrotica vittata Fabr.
Diabrotica longicornis Say. (Webster, 1913, p. 2.)
Haltica torquata Lec.
Chœtocnema denticulata Ill.
Chœtocnema pulicaria Cr. (Forbes, 1905, p. 10.)
Chœtocnema confinis Cr.
Chœtocnema ectypa Horn. (Anon., 1909, p. 568.)
Eleodes tricostata Say. (Parks, 1918, p. 388.)
Eleodes opaca Say. (McColloch, 1919, p. 185.)
Anthicus difficilis Lec.
Anthicus confusus Lec.
Sphenophorus maidis Chittn. (Hayes, 1916, p. 122.)
Sphenophorus phœniciensis Chittn. (Morrill, 1915, p. 39.)

DIPTERA.

Gonimima unifasciata Desv. (Knight, 1916, p. 760.)
Contarinia sorghicola Coq.
Winthemia quadripustulata Fabr. (Knight, 1916, p. 760.)
Musca domestica Linn.
Chœtopsis œnea Wied. (Forbes, 1905, p. 164.)

LEPIDOPTERA.

Celama (Nigetia) sorghiella Riley. (Anon., 1909, p. 570, and Forbes, 1905, p. 169.)
Heliothis obsoleta Fabr.
Lycophotia margaritosa Haw. *saucia* Hübner.
Cirphis (Heliophila) multilinea Walk. (Vickery, 1915, p. 389.)
Cirphis (Heliophila) latiuscula H. S. *subpunctata* Haw. (Vickery, 1915, p. 389.)
Cirphis (Heliophila) unipuncta Haw. (Vickery, 1915, p. 389.)
Neleucania (Leucania) albilinea Hübner. (Forbes, 1905, p. 83.)
Laphygma frugiperda A. and S. (Chittn., 1905, p. 601.)
Pyrausta nubilalis Hübner.
Diatrœa saccharalis Fabr. (Forbes, 1905, p. 92.)
Diatrœa zeacollella Dyar. (Ainslie, 1919, p. 4.)
Elasmopalpus lignosellus Zell. (Anon, 1906, p. 634.)
Pyroderces (Batrachedra) rileyi Wals. (Anon., 1907, p. 510.)
Sitotroga cerealella Oliv. (Newell, 1915, p. 11.)

HYMENOPTERA.

Meteorus communis Cress. (Knight, 1916, p. 761.)
Apanteles militaris Walsh. (Knight, 1916, p. 761.)
Apanteles rufocoxalis. (Knight, 1916, p. 761.)
Ichneumon lœtus Brull. (Knight, 1916, p. 761.)
Tetrastichus sp. (Dean, 1911, p. 55.)
Bembex sp.
Aprostocetus diplosidis Crawf. (Dean, 1911, p. 55.)
Apis mellifica Linn.
Ageniella n. sp. (det. by Gahan.)
Halictus sp.
Ageniella sp.
Ceropales foxii Roh.
Dasymutilla sp.
Diodontus suffusus Fox.
Nysson sp.
Silaon sp.
Perilampus sp.
Eurytoma sp.
Spilochalcis sp.
Anteris nigriceps Ashm.
Apanteles sp.
Microbracon sanninoideœ Gah.
Apanteles sp.
Hoplogryon n. sp. (Det. by Gahan.)
Pheidole sp.
Ponera sp.
Cremastogaster sp.
Iridomyrmex humilis Mayr. (Anon., 1908, p. 542.)
Pogonomyrmex barbatus Smith. (Forbes, 1905, p. 159.)
Pogonomyrmex occidentalis Cress.
Solenopsis molesta Say.
Monomorium minutum Buck.

LITERATURE CITED.

AINSLIE, G. G. *1919.*—The larger corn-stalk borer. U. S. Dept. Agri., Farmers' Bull. 1025, pp. 1-12.

ANON. *1906.*—The principal injurious insects of 1905. Yearbook for 1905, U. S. Dept. Agri., pp. 628-636.

—— *1907.*—The principal injurious insects of 1906. Yearbook for 1906, U. S. Dept. Agri., pp. 508-517.

—— *1908.*—The principal injurious insects of the year 1907. Yearbook for 1907, U. S. Dept. Agri., pp. 541-552.

—— *1909.*—The principal injurious insects of the year 1908. Yearbook for 1908, U. S. Dept. Agri., pp. 567-580.

—— *1912.*—El gusano de la cana en Costa Rica (The sugar-cane bug in Costa Rica). Bol. de formento, San José, Porto Rica, No. 7, pp. 466-469. See Review of Applied Entomology, vol. I, p. 20. (Original not seen.)

CHITTENDEN, F. C. *1903.*—A brief account of the principal insect enemies of the sugar beet. U. S. Bu. of Ent., Bull. 43, pp. 1-17.

—— *1905.*—The principal injurious insects of 1904. Yearbook for 1904, U. S. Dept. of Agri., pp. 600-606.

DEAN, W. H. *1911.*—The sorghum midge. U. S. Bu. Ent., Bull. 85, part IV, pp. 39-58.

FORBES, S. A. *1905.*—A monograph of insect injuries to Indian corn. Part II, Twenty-third Rept. Ill. State Ent., pp. 1-273.

GIBSON, E. H. *1916.*—The corn and cotton wireworm in its relation to cereal and forage crops, with control measures. U. S. Dept. Agri., Farmers' Bull. No. 733, pp. 1-7.

GRAF, J. E. *1914.*—A preliminary report on the sugar-beet wireworm. U. S. Bu. Ent., Bull. 123, pp. 1-68.

HALLOWAY, I. E. *1913.*—Field observations on sugar-cane insects in the United States. U. S. Dept. of Agri., Bu. Ent., Cir. 171, pp. 1-8.

HAYES, W. P. *1916.*—A study of the life history of the maize billbug. Journ. Econ. Ent. 9, pp. 120-128.

HUTSON, J. C. *1918.*—Some insect pests in Cuba. Agri. News XVII, No. 421, pp. 186-187, Barbados (original not seen).

KNIGHT, H. H. *1916.*—The army worm in New York in 1914, *Leucania unipuncta* Haworth. Cornell Agri. Exp. Sta. Bull. 376, pp. 751-765.

MCCOLLOCH, J. W. *1919.*—*Eleodes opaca* Say, an important enemy of wheat in the Great Plains area. Journ. Econ. Ent., 12:183-194.

MARSH, H. O. *1910.*—Biologic notes on species of *Diabrotica* in southern Texas. U. S. Bu. of Ent., Bull. 82, pp. 76-84.

MORRILL, A. W. *1910.*—Plant bugs injurious to cotton bolls. U. S. Bu. of Ent., Bull. 86, pp. 1-110.

—— *1915.*—Report of the entomologist. Arizona Comm. Agr. and Hort., Seventh Ann. Rept., Year Ending June 30, 1915. pp. 1-50.

NEWELL, W. *1915.*—Insect enemies of Sudan grass. Texas Agri. Exp. Sta. Cir. 7, n. s., pp. 1-18.

PARKS, H. B. *1918*—Notes on *Eleodes tricostata* Say. Journ. Econ. Ent., 11:388.

SANDERSON, E. D. *1904.*—Insects of 1903 in Texas. U. S. Bu. Ent. Bull. 46, pp. 92-96.

—— *1906.*—Report on miscellaneous cotton insects in Texas. U. S. Bu. Ent. Bull. 57, pp. 1-63.

TITUS, E. S. G. *1905.*—Some miscellaneous results of the work of the Bureau of Entomology, VIII: Some sugar-cane insects. U. S. Bu. of Ent., Bull. 54, p. 88.

VICKERY, R. A. *1915.*—Notes on three species of *Heliophila* which injure cereal and forage crops at Brownsville, Tex. Journ. Econ. Ent., 8:389-392.

VICKERY, R. A.; and WILSON, T. S. *1919.*—Observations on wingless May beetles. Journ. Econ. Ent. 12:238-245.

WEBSTER, F. M. *1913.*—The western corn rootworm. U. S. Dept. Agri., Bull. 8, pp. 1-8.

WILDERMUTH, V. L. *1915.*—Three-cornered alfalfa hopper. Journ. Agr. Research, 3:343-362.

WILSON, H. F.; and VICKERY, R. A. *1918.*—A species list of the Aphididæ of the world and their recorded food plants. Trans. Wisc. Acad. Sci., Arts and Letters, 19:22-355.

How to Determine Altitudes Satisfactorily With an Aneroid Barometer.

J. E. TODD.

The purpose of this paper is to give a few simple rules by the observance of which the local influence of the weather and other temporary conditions may be eliminated and the normal pressure of the atmosphere at that point be definitely determined. The difference in the normal or average atmospheric pressure at two points will give their difference in altitude.

There are three fields in which the aneroid is an almost ideal instrument:

1. The determination of the height of mountains and other points in a mountainous region. These are miles apart and vary thousands of feet in height. An admirable plan for the use of the aneroid in such a field was devised by Gilbert years ago and was published in the second annual report of the United States Geological Survey, page 403 *et seq.*

2. The ascertaining of altitudes in regions of low relief, hilly and plains areas. The differences in altitudes between adjacent points are from a few